Y-12 Sitewide Risk Management Program

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Presentation outline

- Introduction
- Status Evaluation
- Process Development
- Testing
- Implementation
- Conclusion

Introduction

- Contractor Assurance discussions between B&W Y-12 and Y-12 Site Office indicated need to strengthen Risk Acceptance at Y-12
- On hold/unfunded items that may indicate risk to site operations
- B&W Y-12 Quality Assurance was asked to develop a Risk Determination/ Acceptance process that would support Contractor Assurance

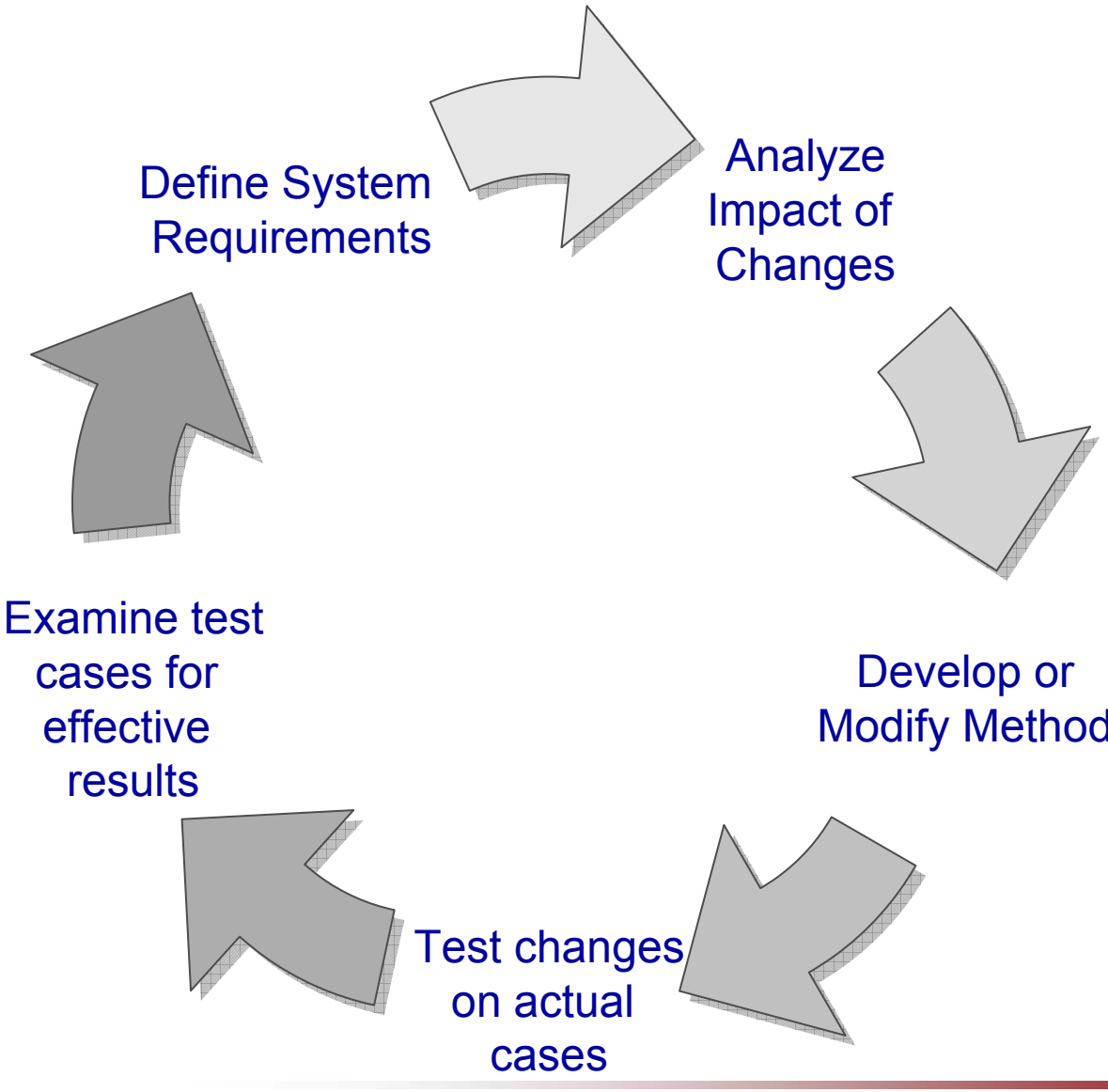
Status Evaluation

- Current Risk Evaluations
  - Independent Assessments
  - Management Assessments
  - Weapon Quality Noncompliances/New Requirements
  - ES&H / P&I / RTBF / Projects
  - Financial Assessments
  - Fire Protection Reviews
  - Safety Basis Reviews
- Intent not to replace current risk systems immediately, rather to offer sitewide system for general applicability

Status Evaluation - Gap Analysis

Issue Sources	Documentation of Issues	Responsible Authority	Disposition of Unresolved Issues	Risk Method Used for Unresolved Issues
Nuclear & Chemically Haz. Facilities	SARs, TSRs, HERs, USQDs	Facility SM and NNSA	Implementation Plan approved by NNSA	Yes
Assessments	IM--CAPS	Division Manager/Delegate	Put on Hold in CAPS	No
Facility Inspection Walkdowns	FIMS/CAIS DOE/HQ databases	Facility Owner/Building Manager	Disposition recommended to FCAS Mgr	No
Nuclear Safety Issues/Incidents	DOE NTS database	Department Manager/Delegate	Implementation Plan	Yes
Nuclear Criticality Issues	NCS CAR, UCN-20620	NCS/Area Supervisor	Handled within SAR/TSR/USQD system	Yes
Safeguard/Security	CITS/CAPS	Division Manager/Delegate	Tracked and reported to NNSA/HQ Mthly	Yes
PrYde (housekeeping surveys)	JIT Forms	Zone Manager	No formal program at this time	No
New DOE/NNSA Requirements	Letter or Impl. Plan to NNSA	Functional Area Manager	Impact Statement to DOE/NNSA for approval	Yes
Legacy Issues/Environmental	Environmental Impact Reports	ES&H Manager	Reported	No
Facility Risk Reviews	Facility Risk Review Reports	Y-12 Sr. Mgr/YSO	Handled or Compensatory Measures	Yes
Site-Level Metrics/Negative Trends	Metrics	Y12 Sr. Mgr	Per Sr. Manager direction	As Directed
Maintenance Tasks		Facility Owner/Zone Manager		No

Process Development - ISM Model



Process Development – System Requirements

General	Able to be implemented for sitewide use
Appropriate	Risks raised to appropriate levels for acceptance
Simple	Minimum number of determination statements
Flexible	Able to be used on multiple types of evaluation (Occurrences, hazard analysis, financial impact, priorities)
Changeable	Can be revised if necessary or tailored to an individual application

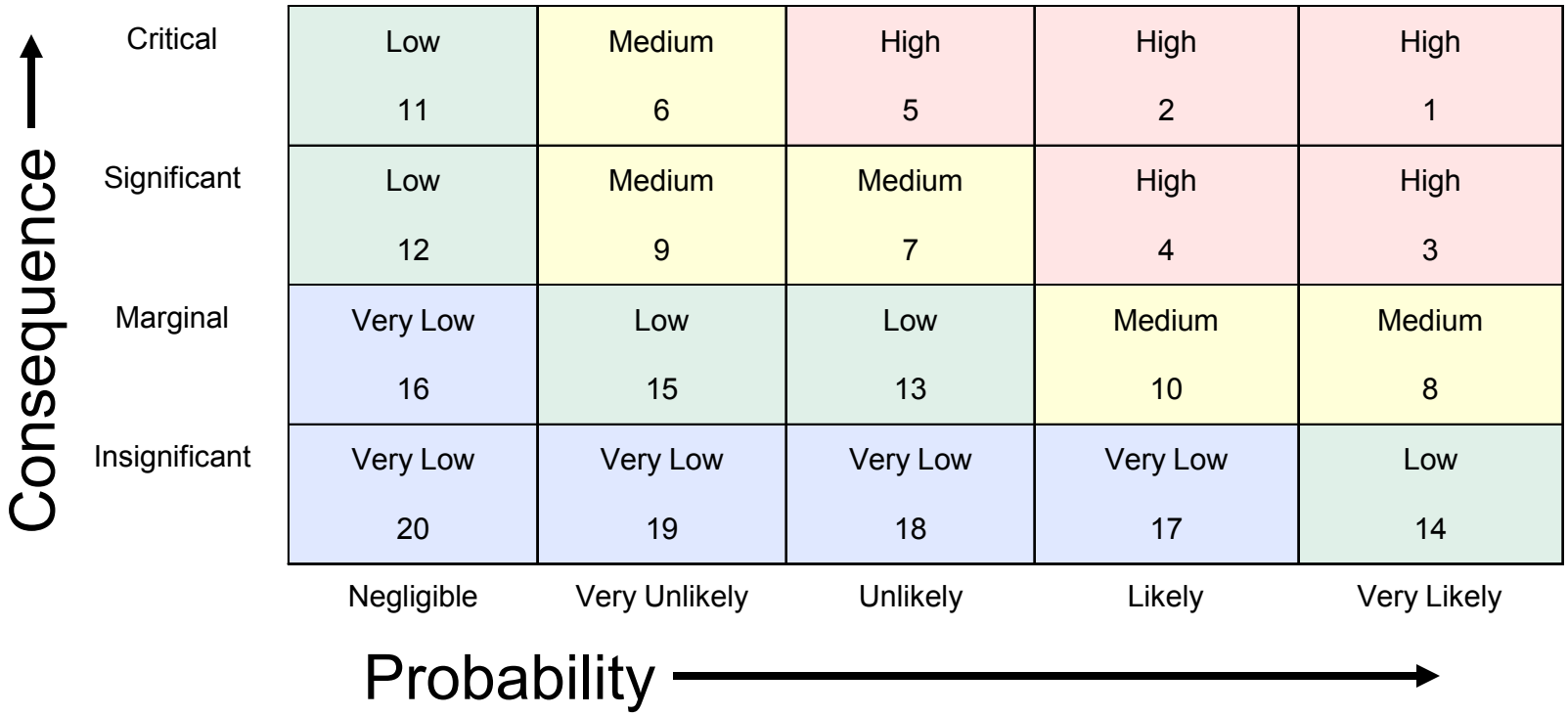
Process Development (cont)

- Based on Y60-WP-200 *Weapons Program Risk Management* procedure
- Modified for general plant applicability
- Added risk acceptance levels
- Major components:
  - *Risk Grading and Approval* - form for per-risk-item use
  - Y15-016 - *Risk Determination and Acceptance* – procedure for implementation of process

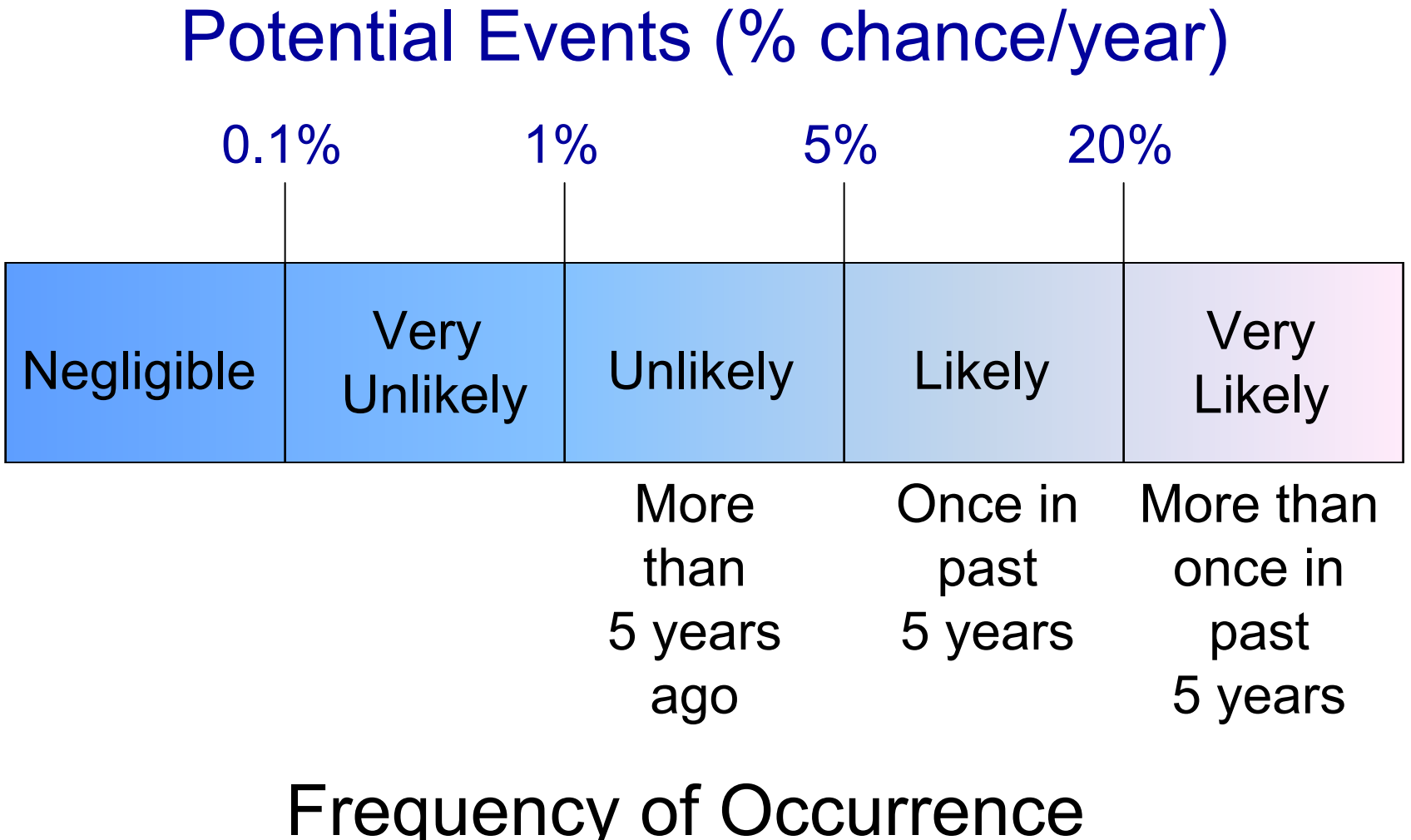
Analyze impact - Limitations on use

- Process MAY be used for:
  - Determining programmatic risk of potential events
  - Evaluating risk of continued operation after occurrence
  - Prioritizing funding for “below the line” items
  - Management acceptance/ notification of critical issues
- Process MAY NOT be used for:
  - Tailoring requirements
  - “Risking” out of requirements compliance
  - Hypothetical low-probability event chains to drive higher risk levels
  - Accepting conditions outside of safety basis

Development - Risk Matrix



Probability criteria



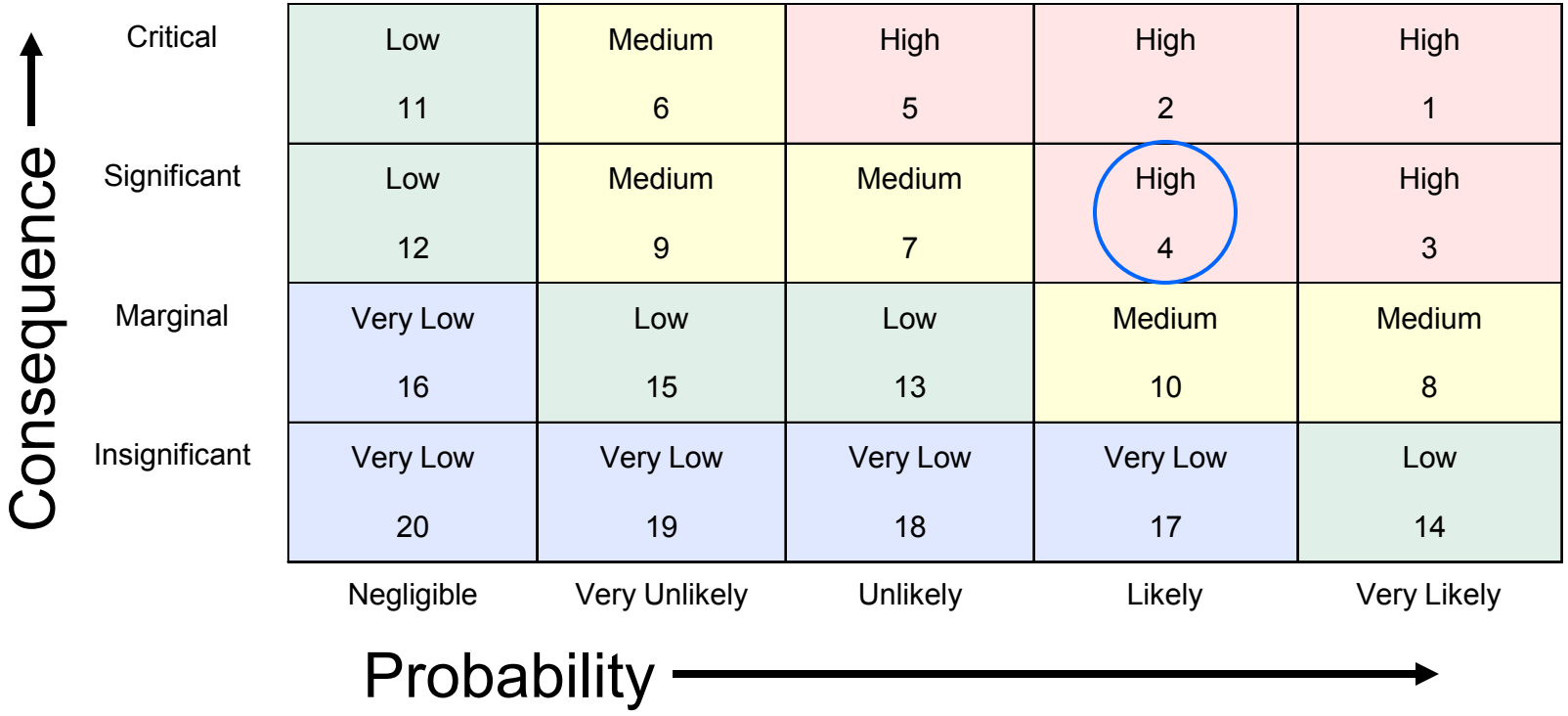
Risk Consequence

	Insignificant	Marginal	Significant	Critical
Health	No effect	Temporary effect	Permanent effect	Fatality
Cost	<$250K	<$500K	<$1,000K	>$1,000K
Schedule or Budget changes	<25%	<50%	<100%	>100%
Product Impact	No effect	Minor Rework	Design changes	Prevent delivery
Payback	>18 months	<18 months	<12 months	<6 months
Environment	No impact	No impact	Violation of operational permits	Exceed EPA limits

Acceptance Levels

Risk Level	Acceptance Authority
High 1 – 3	President (ESG) with NNSA Site Manager Approval/Acceptance as required
High 4 – 5	Senior Manager
Medium 6 – 10	Department/Division Manager
Low 11 – 15	Supervisor/Operations Manager
Very Low 16 – 20	Line Supervisor, Subject Matter Expert, Issue Owner

Testing – Small warehouse fire



Small Warehouse Fire - Consequence

Significant

- The event will cause permanent health effects to workers or the public.
- The event will cause environmental effects at a level greater than allowed under Y-12 operational permits.
- The event will raise quality issues adversely affecting product manufacturing, acceptance, or delivery.
- The event will prompt the need for product design changes.
- As a direct result of the event, cost estimates will significantly exceed budget and significant schedule changes could be necessary.
- The event will result in >$500,000 cumulative costs, or a lost performance evaluation fee.
- If the event is a project, the payback is within 12 months.
- The event will pose a threat to national security interests and/or critical DOE assets.

Small Warehouse Fire - Probability

Likely:

- The event **may occur** one or more times during the life cycle of the program or project
- the probability of the event's occurrence is considered to be **greater than or equal to 5% but less than 20% in any given year**
- the event has occurred **once** in **the previous 5 years**.

Result – Small warehouse fire

	Negligible	Very Unlikely	Unlikely	Likely	Very Likely
Critical	Low 11	Medium 6	High 5	High 2	High 1
Significant	Low 12	Medium 9	Medium 7	High 4	High 3
Marginal	Very Low 16	Low 15	Low 13	Medium 10	Medium 8
Insignificant	Very Low 20	Very Low 19	Very Low 18	Very Low 17	Low 14

Actions 2,3,6,7

Actions 4,5

Corrective Actions:

2. Screen ongoing legacy projects for appropriate hazard analysis
3. Develop and issue a lessons learned
4. Review process description role in hazard analysis process
5. Evaluate AJHA Operations Hazard Safety Question Set to determine if legacy/salvage materials are adequately addressed
6. Develop a disposition path for the remaining containers
7. Update the pre-job brief to ensure changing conditions are identified and discussed

Testing – Iterative Approach

- Multiple process revisions were completed after various tests to ensure system requirements were met
- Testing included:
  - Corrective action system facility issues
  - Issues Management Prioritization and Review Board use
  - Programmatic risk evaluation on JTAs
  - Financial ranking on below-the-line campaigns projects

Implementation

- Two current uses:
  - Issues Management Prioritization and Review Board (IMPRB) issues – replaces existing significance determination worksheet
  - Legacy Risk – characterizes legacy issues for senior management
- Facilities, Infrastructure, and Services (FI&S) developing process to prioritize work planning
- Other programs/projects utilizing system on-demand for programmatic risk assessments

Implementation – IMPRB issues

- IMPRB is a standing board that reviews issues from assessments
- Controlled team of individuals who could be trained to utilize the system quickly
- Regular meetings provide continual feedback for process improvements
- Team able to compare new system with previous Significance Determination Worksheet to verify issue levels were appropriate in new system

Implementation - Legacy Risk

- Currently working on ranking “Legacy” issues
  - Roundtable discussions listed many issues; issues were broken into groups
  - Groups of issues worked by SMEs to run issues through risk process
  - Report being finalized for B&W Y-12 senior staff
  - Report will go to site office
  - Top-level metric on high-level risks – risks to be re-evaluated quarterly

Conclusions

- New system has been well received by both contractor and site office
- Frequent requests by internal groups to utilize system during planning/report generation
- Iterative development allowed for tailoring of the system to meet management expectations

Backup slides

Risk Probability

Very Likely:

- The event is **expected to occur** one or more times during the life cycle of the program or project
- the probability of the event's occurrence is considered to be **20% or greater in any given year**
- the event has occurred **more than once in the previous 5 years**.

Likely:

- The event **may occur** one or more times during the life cycle of the program or project
- the probability of the event's occurrence is considered to be **greater than or equal to 5% but less than 20% in any given year**
- the event has occurred **once** in **the previous 5 years**.

Unlikely:

- The event is **not considered likely** to occur during the life cycle of the program or project
- the probability of the event's occurrence is considered to be **greater than or equal to 1% but less than 5% in any given year**.

Very Unlikely:

- The event is **not expected** to occur anytime in the life cycle of the program or project
- the probability of the event's occurrence is considered to be **less than 1% in any given year**.

Negligible:

- The likelihood of the event occurring anytime in the life cycle of the program or project is **negligible**
- the probability of the event's occurrence is considered to be **less than 0.1% in any given year**.

Risk Consequence

Critical

- The event results in a fatality to workers or the public.
- The event will result in an environmental impact at a level harmful to the public based on EPA requirements.
- The event will prevent the manufacturing, acceptance, or delivery of product.
- Schedule or budget changes will be excessive and could jeopardize missions, program objectives, or the reputation of Y-12.
- The event will result in >$1,000,000 cumulative costs, or a lost performance evaluation fee.
- If the event is a project, the payback is within 6 months.
- The event will adversely affect nuclear safety regulation compliance as defined by the Price-Anderson Amendments Act (PAAA).
- The event will pose a serious threat to national security interests and/or critical DOE assets, or create serious security situations

Significant

- The event will cause permanent health effects to workers or the public.
- The event will cause environmental effects at a level greater than allowed under Y-12 operational permits.
- The event will raise quality issues adversely affecting product manufacturing, acceptance, or delivery.
- The event will prompt the need for product design changes.
- As a direct result of the event, cost estimates will significantly exceed budget and significant schedule changes could be necessary.
- The event will result in >$500,000 cumulative costs, or a lost performance evaluation fee.
- If the event is a project, the payback is within 12 months.
- The event will pose a threat to national security interests and/or critical DOE assets.

Marginal

- The event will have temporary health effects on workers or the public.
- There is no impact on form, fit, or function of production parts or assemblies.
- The event will prompt the need for deviations or minor rework on product.
- As a direct result of the event, cost estimates will marginally exceed budget or schedule changes could require minor adjustment of site-level milestones.
- The event will result in >$250,000 cumulative costs, or a lost performance evaluation fee.
- If the event is a project, the payback is within 18 months.
- The event will pose a threat to DOE security interests or potentially degrade the overall effectiveness of the Department's safeguards and security protection program.

Insignificant

- There is no health impact to workers or the public.
- The event poses minimal or no consequence; it is considered unimportant.
- There is no threat to a product's form, fit, or function.
- There is some potential for the transfer of funds but budget estimates would not be exceeded.
- There will be a slight potential for schedule change, which could be compensated for by available schedule float.
- The event will result in <$250,000 cumulative costs, or a lost performance evaluation fee.
- If the event is a project, the payback is greater than 18 months.
- The event will pose threats to the DOE by adversely impacting the ability of organizations to protect DOE safeguards and security interests.

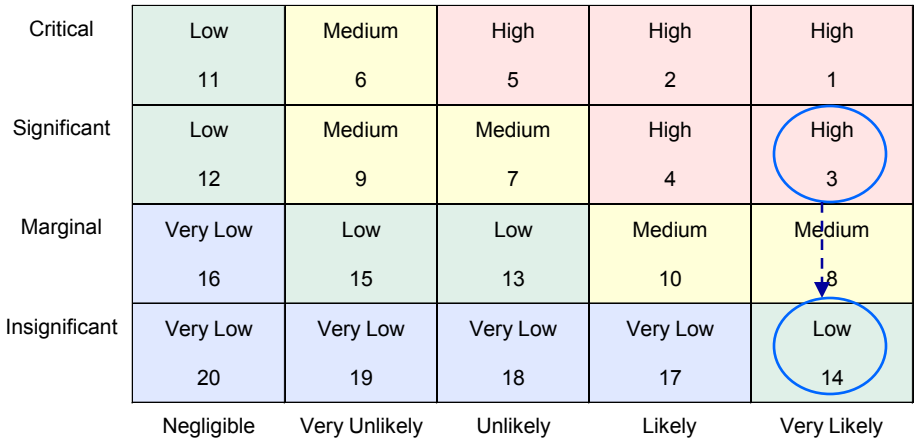
Ranking guidelines

- There may be multiple consequences for each outcome. Rank the highest consequence of each outcome along with the probability of that outcome to determine risk.
- There may be multiple outcomes. Rank the highest risk outcome as the risk for that event.
- Take credit for mitigating systems and processes in place that would reduce consequence. Rerank if conditions change.

Implementation – Containers Legacy

- Explanation of Risk Ranking:

  The risk of significant uncertainty in understanding of contents in certain containers in the Warehouse
- **Consequence – Significant** – Y-12 stores containers from other sites with little data on contents. Risk of fires, contamination events, and finding materials outside the approved safety basis.
- **Probability – Very Likely** – These types of events (unexpected contents, fires) have happened multiple times in the past 5 years



Corrective Actions:

- Utilize data mining to minimize the number of containers to be opened.
- Perform sampling as necessary to minimize the number of containers to be opened.
- For containers that must be opened, move to area that can deal with potential hazards (sealed glove boxes, etc).

Risk categorization after corrective actions:

- Low 14 with corrective actions put in place following previous events.